

CONTENTS

PART I

Preface	vii
List of referees	ix
THEORY	
M.A. Ratner and A. Nitzan, Fast ion conduction: some theoretical issues	3
A. Bunde, Anomalous transport in disordered media	34
F. Tachibana, M. Kobayashi and H. Okazaki, Molecular dynamics study of ionic motion in α -Ag ₂ Te	41
M.A. Zendejas and J.O. Thomas, A molecular dynamics simulation study of long-range ionic distributions in Na ⁺ β "-alumina	46
J. Tallon, The phase behaviour of silver iodide. Constant stress molecular dynamics simulation	53
F. Billi, H.E. Roman and W. Dieterich, Theory of density profiles in α -AgI-type superionic compounds	58
I.Z. Kostadinov and I.V. Petrov, Hall effect in superionics due to ion hopping	63
T. Ishii, Ultrasonic attenuation in superionic conductors	67
J.F. Gouyet, Structure of diffusion fronts in systems of interacting particles	72
R. Blender and W. Dieterich, Random ac-networks in the theory of inhomogeneous ionic conductors	82
G. Szabó, Monte Carlo simulation of a Coulomb gas in simple cubic lattice	86
A.S. Nowick, W-K Lee and H. Jain, Survey and interpretation of pre-exponentials of conductivity	89
H. Okazaki and F. Tachibana, Monte Carlo simulation for a caterpillar motion in α -Ag ₂ X type superionic conductors	95
K. Funke, Jump relaxation in solid ionic conductors	100
T. Ishii, H. Sato and R. Kikuchi, Frequency dependence of ionic conductivity as treated by the path probability method	108
J.B. Bates and J.C. Wang, Dielectric response of ionic conductors	115
R. Granek, A. Nitzan, S.D. Druger and M.A. Ratner, Dynamics of ionic motion in polymeric ionic conductors	120
W. Schirmacher, Theory of diffusion and ionic conduction in glass	129

W. Schirmacher and A. Schirmer, Theory of spin-lattice relaxation of diffusing light nuclei in glasses	134
H. Sato, S.A. Akbar and T. Ishii, Frequency dependence of hopping conductivity and mixed alkali effect	138
J.C. Giuntini, J.V. Zanchetta and F. Henn, Model of ac conductivity in protonic conductors	142
M.C. Abramo, G. Pizzimenti and G. Carini, Size effects of Ag^+ ion in the computer simulation of $\text{Ag}_2\text{O}-\text{B}_2\text{O}_3$ glasses	148
K. Yonashiro, T. Tomoyose, E. Sakai, M. Yamashiro and M. Kobayashi, Thermal conduction by mobile ions in superionic conductors	152
INORGANIC CATIONIC CONDUCTORS, GENERAL	
H. Hruschka, E. Lissel and M. Jansen, Na-ion conduction in the solid solutions of $\text{Na}_3\text{PO}_4/\text{Na}_2\text{SO}_4$ and $\text{Na}_3\text{AlF}_6/\text{Na}_2\text{SO}_4$	159
A. Lundén, Enhancement of cation mobility in some sulphate phases due to a paddle-wheel mechanism	163
E.A. Secco, Fast cation conductivity by percolation in alkali sulfate compositions	168
S. Yoshikado, T. Ohachi, I. Taniguchi, W. Watanabe, Y. Fujiki and Y. Onoda, Ionic conduction of new one-dimensional ionic conductors with large tunnels: $\text{A}_x[\text{Ga}_8\text{Ga}_{8+x}\text{Ti}_{16-x}\text{O}_{56}]$ ($\text{A}=\text{K}, \text{Rb}, \text{or Cs}, x \leq 2$)	173
Y. Onoda, M. Watanabe, Y. Fujiki, Y. Kudo, T. Erata, S. Yoshikado, T. Ohachi and I. Taniguchi, NMR study of Ba^{2+} ion motion in one-dimensional ionic conductor with hollandite-type structure	179
A.V. Chadwick, K. Flack, J.H. Strange and J. Harding, Defect structures and ionic transport in lithium oxide	185
T.W.D. Farley, W. Hayes, S. Hull, R. Ward, M.T. Hutchings and M. Alba, The dynamic properties of lithium oxide investigated by neutron scattering techniques	189
B. Baranowski, M. Friesel and A. Lundén, Tricritical point in the p - T phase diagram of Ag_2HgI_4	194
S.I. Bredikhin, N.N. Kovaleva and N.V. Lichkova, Electron emission in RbAg_4I_5 crystals stimulated by phase transitions	200
R. Aronsson, L. Börjesson and L.M. Torell, Elastic constants of solid electrolytes; a Brillouin scattering study of $\alpha\text{-AgI}$, fcc Li_2SO_4 and bcc LiAgSO_4 single crystals	204
T. Kawada, H. Yokokawa and M. Dokiya, Ionic conductivity of montmorillonite/alkali salt mixtures	210
J.T.S. Irvine and A.R. West, Sodium-phosphate-based solid electrolytes	214
R. Frech and E. Cazzanelli, Sulfate ion time correlation functions in cubic lithium sulfate	220

M.A. Pimenta, P. Echegut, F. Gervais and P. Abélard, Lithium conductivity in LiKSO_4 assisted by sulphate orientational disorder	224
K. Singh, V.R. Chandrayan and V.K. Deshpande, Electrical properties of Li_2SO_4 - Ag_2SO_4 binary system with AgX ($\text{X}=\text{Cl}$, Br and I) addition	228
A.L. Kruglyashov and E.M. Skou, Ionic conductivity of compounds in the system Na_2MoO_4 - ZnMoO_4	233
S. Frostäng, J. Grins and M. Nygren, Phase analysis and ionic conductivity studies of the system $\text{Na}_{1.8}\text{Be}_{0.9}\text{Si}_{1.1}\text{O}_4$ - $\text{Na}_{1.8}\text{Zn}_{0.9}\text{Si}_{1.1}\text{O}_4$	237
V.N. Erofeev and E. Hartmann, Increased electrical conductivity in alkali halide crystals	241
R.G. Buckley, J.L. Tallon and J.F. Clare, Impedance spectroscopy of the zeolite catalyst ZSM-5	245
E. Krogh Andersen, I.G. Krogh Andersen, J. Metcalf-Johansen, K.E. Simonsen and E. Skou, The ionic conductivity of alkalimetal-zeolite X	249
H. Boller and R. Quint, On the crystal structure of hollandite-like $\text{Ti}_x\text{V}_5\text{S}_8$. Evidence for one-dimensional cation order	254
M. Watanabe, Y. Fujiki, S. Yoshikado and T. Ohachi, Structural aspects of the new one-dimensional ionic conductors: $\text{A}_x\text{Ga}_8\text{Ga}_{8+x}\text{Ti}_{16-x}\text{O}_{56}$ ($\text{A}=\text{K}$, Rb and Cs , $x \leq 2$)	257
A. Lundén, K. Schroeder and H. Ljungmark, Phase diagrams of binary Li_2SO_4 - MeSO_4 ($\text{Me}=\text{Be}$, Mg , Ca , Sr , Ba , Zn , Cd , Mn)	262
K. Singh, F.C. Raghuwanshi and V.K. Deshpande, Li_2SO_4 : LiOH eutectic system, a promising solid electrolyte	267
F.W. Poulsen, N.H. Andersen, K.N. Clausen, D.R. Sadoway and L.H. Øgendal, Super ionic conduction in alkali metal hexachloro niobates and tantalates	271
A. Turković and D. Šokčević, Heat capacity and phase transition in the solid electrolyte $\text{RbCu}_4\text{Cl}_3(\text{I}_{2-x}\text{Cl}_x)$ for $x=0.335$	276
S.I. Bredikhin, N.N. Kovaleva, I.Sh. Khasanov and N.N. Lichkova, Effect of ion implantation and additive colouring on the electron centers in RbAg_4I_5 superionic crystals	280
B. Graneli, U. Dahlborg and P. Fischer, Neutron powder diffraction investigation of γ - and β -copper chloride in the temperature range 8–686 K	284
A.L. Laskar, K.V. Reddy and G.A. Popson, Mass and charge transport in $\text{AgCl}\cdot\text{Ce}^{3+}$ system	294
β-ALUMINA	
B. Dunn, B.B. Schwarz, J.O. Thomas and P.E.D. Morgan, Preparation and structure of Li-stabilized Na^+ β'' -alumina single crystals	301
J.A. Bruce, C.C. Hunter and M.D. Ingram, Mixed cation effects, site selectivities and electric modulus spectroscopy in β -alumina solid electrolytes	306

G. Mariotto, M. Montagna and F. Rossi, Spectroscopy of sodium β'' -alumina: Cr^{3+}	311
W. Carrillo-Cabrera, J.O. Thomas and G.C. Farrington, The structure of the lanthanide Gd^{3+} , Eu^{3+} and Nd^{3+} β'' -aluminas	317
G. Collin, R. Comes, J.-P. Boilot and P. Colomban, Structure, ion-ion correlation and compensation mechanisms in β - and β'' -alumina	324
H. Sato, Structures of β -alumina-type compounds in terms of stacking of building units	333
G.K. Duncan and A.R. West, The stoichiometry of β'' -alumina: phase diagram studies in the system $\text{Na}_2\text{O}-\text{MgO}-\text{Li}_2\text{O}-\text{Al}_2\text{O}_3$	338
J.D. Barrie, B. Dunn, O.M. Stafsudd, M.A. Saltzberg, R. Seshadri and G.C. Farrington, Structure/optical property relationships in multiple ion exchanged β'' -aluminas	344
P.K. Davies and F.H. Garzon, Studies of the equilibrium behaviour of crystalline fast-ionically conducting systems	348
G.S. Rohrer, P.K. Davies and G.C. Farrington, The effect of thermal history on the ionic conductivity of $\text{Pb(II)}-\beta''$ -alumina	354
R.B. Queenan and P.K. Davies, The effects of thermal treatment upon the structural and optical properties of the $\text{Na-Nd } \beta''$ -aluminas	358
K. Edström, J.O. Thomas and G.C. Farrington, Structural evidence for the interstitialcy mechanism in β -alumina	363
M.W. Breiter, M. Maly-Schreiber, G. Allitsch and P. Linhardt, Properties of polycrystalline β'' -alumina isomorphs	369
G. Staikov, V. Nikolov and P.D. Yankulov, Thermodynamics and kinetics of the ion exchange of sodium with cadmium in beta-aluminas	373
F.H. Garzon and P.K. Davies, Thermal transitions in divalent β'' -aluminas	377
D.R. Franceschetti and E.E. Hellstrom, Impedance spectra of polycrystalline Ba-, Cd-, and Sr- β'' -alumina	381
M.A. Saltzberg, F.H. Garzon, P.K. Davies and G.C. Farrington, Properties and microstructures of a mixed-valency solid electrolyte: $\text{Na-Eu(II)}-\beta''$ -alumina	386
G. Róg, W. Pycior and A. Kozłowska-Róg, Preparation and properties of manganese(II)- and mercury(II)- β'' -aluminas	391
C.K. Kuo and J.J. Brophy, Contact noise in sodium β -alumina	396
NASICON	
J.P. Boilot, Ph. Colomban and G. Collin, Stoichiometry: structure – fast ion conduction in the NASICON solid solution	403
J.F. Bocquet, M. Barj, G. Lucazeau and G. Mariotto, Potential energy calculation and conductivity mechanism in $\text{Na}_3\text{Cr}_2\text{P}_3\text{O}_{12}$ and $\text{Na}_{1+x}\text{Zr}_{2-x}\text{Cr}_x\text{P}_3\text{O}_{12}$	411
C. Delmas, A. Nadiri and J.L. Soubeyroux, The NASICON-type titanium phosphates $\text{ATi}_2(\text{PO}_4)_3$ ($\text{A}=\text{Li}, \text{Na}$) as electrode materials	419

W. Wang, S. Wang, L. Rao, Z. Lu and X. Yi, Study of $\text{Na}_{1+x+y}\text{Zr}_{2-y}\text{Nd}_y\text{Si}_x\text{P}_{3-x}\text{O}_{12}$ fast ion conductors	424
G. Collin, R. Comes, J.-P. Boilot and P. Colomban, The monoclinic phase of true NASICON: structure, correlations and transition	427
M. Barj, K. Chhor, L. Abello, C. Pommier and C. Delmas, Low temperature thermodynamic study on NASICON type solid electrolytes $\text{Na}_3\text{Cr}_2\text{P}_3\text{O}_{12}$ and $\text{Na}_3\text{ZrMgP}_3\text{O}_{12}$	432
G. Collin, R. Comes, J.-P. Boilot and P. Colomban, NASICON analog $\text{Na}_3\text{Sc}_2(\text{PO}_4)_3$: thermal behaviour of the α , β and γ types, structure, correlations and transitions	437
W. Wang, Z. Zhang, X. Ou and J. Zhao, Properties and phase relationship of the $\text{Na}_{1+x}\text{Hf}_{2-y}\text{Ti}_y\text{Si}_x\text{P}_{3-x}\text{O}_{12}$ system	442
INORGANIC ANIONIC CONDUCTORS	
I. Kosacki, Anion disordering and band structure of PbF_2 superionic crystals	449
M. Yoshimura, K.J. Kim, E. Tani and S. Somiya, Establishment of the equilibrium phase diagrams in fluorite-related systems, $\text{ZrO}_2\text{-CeO}_2$ and $\text{SrF}_2\text{-LaF}_3$, by hydrothermal techniques	452
C. Follet-Houttemane, J. Canonne, J.C. Boivin, J.C. Champarnaud-Mesjard, D. Mercurio, B. Frit and G. Roult, Electrical properties and high temperature crystal structure of the bismuth lead oxyfluoride: BiPbO_2F	458
X. Turrillas, A.P. Sellars and B.C.H. Steele, Oxygen ion conductivity in selected ceramic oxide materials	465
P.K. Moon and H.L. Tuller, Ionic conduction in the $\text{Gd}_2\text{Ti}_2\text{O}_7\text{-Gd}_2\text{Zr}_2\text{O}_7$ system	470
T.L. Wen, Z.Y. Lu and S.F. Li, Influence of thermal cycle on conductivity of YSZ	475
P.J. Shlichta, A crystallographic search program for oxygen-conducting electrolytes	480
S. Hull, T.W.D. Farley, M.A. Hackett, W. Hayes, R. Osborn, N.H. Andersen, K. Clausen, M.T. Hutchings and W.G. Stirling, Quasielastic diffuse neutron scattering from yttria-stabilized zirconia at elevated temperatures	488
A. El Barhmi, E.J.L. Schouler, A. Hammou and M. Kleitz, Influence of quenching on the electrical properties of yttria-stabilized zirconia	493
G. Lorenz, F. Frey, H. Schulz and H. Boysen, Structural investigations up to 1800 K and ionic conductivity in Ca-stabilized zirconia	497
J. Genossar and D.S. Tannhauser, The nature of ESR centers in reduced stabilized zirconia	503
Z. Wang, S. Song, J. Xie and Q. Zhong, The effect of Al_2O_3 addition on the properties of ZrO_2 (2.4 wt% MgO) solid electrolyte	508
A. Nakajima, T. Suemoto and M. Ishigame, Determination of ionic diffusion coefficients and activation energies in $(\text{ZrO}_2)_{1-x}(\text{YbO}_{1.5})_x$ system by using quasielastic light scattering	512

J.R. Jurado, C. Moure, P. Duran and N. Valverde, Preparation and electrical properties of oxygen ion conductors in the $\text{Bi}_2\text{O}_3\text{--Y}_2\text{O}_3$ (Er_2O_3) systems	518
M. Dumélié, G. Nowogrocki and J.C. Boivin, Ionic conductor membrane for oxygen separation	524
F. Abraham, M.F. Debreuille-Gresse, G. Mairesse and G. Nowogrocki, Phase transitions and ionic conductivity in $\text{Bi}_4\text{V}_2\text{O}_{11}$ an oxide with a layered structure	529
G. Meng, C. Chen, X. Han, P. Yang and D. Peng, Conductivity of Bi_2O_3 -based oxide ion conductors with double stabilizers	533
I. Riess, R. Koerner, M. Ricken and J. Noelting, Nonstoichiometric phases in cerium oxide	539
C. Wang, X. Xu, H. Yu, Y. Wen and K. Zhao, A study of the solid electrolyte Y_2O_3 -doped CaZrO_3	542
S. An, W. Wu and Q. Liu, Measurement of electronic conductivity and phase ratio for MgO partially stabilized zirconia	546
J.J. Bentzen, N.H. Andersen, F.W. Poulsen, O.T. Sørensen and R. Schram, Evaluation of 2- and 4-point conductivity measurements on oxide ion conductors	550
P. Laborde, G. Villeneuve, J.M. Reau and J.L. Soubeyroux, NMR study of ^{19}F motion in the $\text{Pb}_{1-x}\text{Bi}_x\text{O}_x\text{F}_{2-x}$ oxyfluoride solid solution: correlations between ionic conductivity, NMR and neutron diffraction	560
K. Hu, C. Chen, D. Peng and G. Meng, Bi_2O_3 -based oxide ion conductors doped with mixed heavy rare earth oxides	566
H^+/OH^- CONDUCTORS	
I. Iwahara, High temperature proton conducting oxides and their applications to solid electrolyte fuel cells and steam electrolyzer for hydrogen production	573
N. Bonanos, B. Ellis and M.N. Mahmood, Oxide ion conduction in ytterbium-doped strontium cerate	579
T. Scherban, W.-K. Lee and A.S. Nowick, Bulk protonic conduction in Yb-doped SrCeO_3 and BaCeO_3	585
K.D. Kreuer, M. Hampele, K. Dolde and A. Rabenau, Proton transport in some heteropolyacidhydrates; a single crystal PFG-NMR and conductivity study	589
R.C.T. Slade, J. Barker, H.A. Pressman and J.H. Strange, Studies of protonic self-diffusion and conductivity in 12-tungstophosphoric acid hydrates by pulsed field gradient in ^1H NMR and ac conductivity	594
R.G. Bell and M.T. Weller, Structure of the proton conductor, cubic $\text{HSbO}_3 \cdot x\text{H}_2\text{O}$	601
S.H. Brown and R. Frech, Proton injection studies in lithium hydrazinium sulfate	607
S. Crouch-Baker and R.A. Huggins, Phase behavior in the Li--Al--O--H system at intermediate temperatures	611

M. Casciola, U. Costantino and S. D'Amico, ac conductivity of cerium(IV) phosphate in hydrogen form	617
J. Gulens, T.H. Longhurst, A.K. Kuriakose and J.D. Canaday, Hydrogen electrolysis using a NASICON solid protonic conductor	622
N. Knudsen, E. Krogh Andersen, I.G. Krogh Andersen and E. Skou, Tin(IV) oxide containing mordenite; syntheses and ionic conductivity measurements	627
M.F. Daniel, B. Desbat and J.C. Lassegues, Solid state protonic conductors: complexation of poly(ethylene oxide) or poly(acrylic acid) with NH_4HSO_4	632
M.F. Daniel, B. Desbat, F. Cruege, O. Trinquet and J.C. Lassegues, Solid state protonic conductors: poly(ethylene imine) sulfates and phosphates	637
C.M. Mari, A. Anghileri, M. Catti and G. Chiodelli, Thermal and water vapor pressure dependence of electrical conductivity in $\text{HTaWO}_6 \cdot x\text{H}_2\text{O}$ ($0 \leq x \leq 1$)	642
M.M. Abdel-Gawad and S.V. Bhat, Evaluation of diffusion coefficient and ionic mobility in $(\text{NH}_4)_4\text{Fe}(\text{CN})_6 \cdot 1.5 \text{H}_2\text{O}$	647
S. Chandra, S.K. Tolpadi and S.A. Hashmi, Transient ionic current measurement of ionic mobilities in a few proton conductors	651
L.-Y. Cheng, S. Crouch-Baker and R.A. Huggins, dc conductivity studies on " Li_5AlO_4 " at intermediate temperatures and its possible application for the electrolysis of water	656
K. Yamashita, H. Owada, T. Umegaki, T. Kanazawa and T. Futagami, Ionic conduction in apatite solid solutions	660
D.R. Balasubramanyam, S.V. Bhat, M. Mohan and A.K. Singh, High pressure NMR and compressibility evidence for a phase transition in the protonic conductor $(\text{NH}_4)_4\text{Fe}(\text{CN})_6 \cdot 1.5\text{H}_2\text{O}$	664
GLASSES	
J.N. Mundy, Models for ionic transport in glass	671
M.D. Ingram, M.A. MacKenzie, W. Müller and M. Torge, Cluster and pathways: a new approach to ion migration in glass	677
W.B. Reid and A.R. West, Atmospheric attack on lithium silicate glass	681
E.I. Kamitsos, M.A. Karakassides and G.D. Chryssikos, Far-infrared spectra of binary alkali borate glasses	687
J.L. Souquet, Glasses as active materials in high-energy density cells	693
B.V.R. Chowdari, R. Gopalakrishnan, S.H. Tang and M.H. Kuok, Characterization of $\text{Ag}_2\text{O}:\text{MoO}_3:\text{P}_2\text{O}_5$ glasses	704
J. Roos, D. Brinkmann, M. Mali, A. Pradel and M. Ribes, $(\text{AgI})_x(\text{Ag}_2\text{S} \cdot \text{GeS}_2)_{1-x}$ glasses studied by ^{109}Ag NMR	710
G. Dalba, P. Fornasini, A. Fontana, F. Rocca and E. Burattini, EXAFS structural studies on $(\text{AgI})_x(\text{Ag}_2\text{O} \cdot 4\text{B}_2\text{O}_3)_{1-x}$ glasses	713

A. Schirmer, P. Heitjans, H. Ackermann, B. Bader, P. Freiländer and H.-J. Stöckmann, Spin-lattice relaxation in lithium-borate glass studied by β -radiation detected NMR	717
A. Fontana, F. Rocca and A. Tomasi, Fractal interpretation of Raman scattering on AgI:Ag ₂ O:B ₂ O ₃	722
J.H. Kennedy and Z. Zhang, Improved stability for the SiS ₂ -P ₂ S ₅ -Li ₂ S-LiI glass system	726
A.C. Martins Rodrigues and M.J. Duclot, Lithium conducting glasses: the Li ₂ O·B ₂ O ₃ ·TeO ₂ system	729
R. Kaushik and K. Hariharan, Glass formation in AgI:Ag ₂ O:V ₂ O ₅ and AgI:Ag ₂ O:(V ₂ O ₅ +B ₂ O ₃) systems: application to solid state battery	732
M. Levy, F. Rousseau and M.J. Duclot, Electrochemical properties of glasses in the TeO ₂ V ₂ O ₅ system	736
W. Burckhardt, B. Rudolph and U. Schütze, New Li ⁺ -ion conducting glasses	739
S. Kikkawa, T. Miyai and M. Koizumi, New lithium ionic conductor, Li-Ge-Se glasses	743
B.V.R. Chowdari and S.K. Akhter, Ionic transport studies of lithium phosphoarsenate glassy system	747
K. Singh, P.R. Gandhi and B.M. Chaudhari, Use of ferroelectric materials to modify cationic conduction of the Li ₂ O:B ₂ O ₃ amorphous solid electrolyte system	752
V.K. Deshpande, A. Pradel and M. Ribes, Influence of Al ₂ S ₃ on the electrical conductivity of the Li ₂ S-SiS ₂ glass system	756
A. Pradel, M. Ribes and M. Maurin, ⁷ Li NMR study of Li ₂ S-SiS ₂ glass system	762
A.C. Martins Rodrigues and M.J. Duclot, LiX (X=Br, F) salt doping effect in lithium borophosphate glasses	766
L. Börjesson, L.M. Torell, R. Vacher, J. Pelous and M. Boissier, Short time dynamics and acoustic properties of xLiCl-0.5Li ₂ O-B ₂ O ₃ glasses between 5 and 700 K	770
A. Mierzejewski, G.A. Saunders, H.A.A. Sidek, R.N. Hampton and I.J. Al-Mummar, Valence instability of samarium ions in phosphate glasses	778
E.I. Kamitsos and M.A. Karakassides, A spectroscopic study of fluoride containing sodium borate glasses	783
M. Cutroni and J. Pelous, Ultrasonic spectra of the (AgI) _x (AgPO ₃) _{1-x} systems in the temperature range below <i>T_g</i>	788
J.M. Reau, B. Tanguy, J.J. Videau, J. Portier and P. Hagenmuller, Transport properties of rapidly quenched glasses in the Z ₂ S ₃ -Ag ₂ S-AgI (Z=As, Sb) systems	792
K. Hariharan and A. Durga Rani, Transport studies on superionic AgI-Ag ₂ O-CrO ₃ glasses	799
J.L. Nowiński, B. Wnętrzewski and W. Jakubowski, The electrical properties of AgI-Ag ₂ O-P ₂ O ₅ glasses with high AgI content	804
R.V.G.K. Sarma and S. Radhakrishna, Transport studies on silver boromolybdate superionic conducting glass	808

N. Satyanarayana and S. Radhakrishna, Glass formation and electrical conductivity studies of $\text{AgI-Ag}_2\text{O}-[x\text{MoO}_3 + (1-x)\text{V}_2\text{O}_5]$ $x=0.1$ to 0.9 system	811
P. Sathya Sainath Prasad and S. Radhakrishna, Transport and dielectric studies on silver based molybdo-tungstate quaternary superionic conducting glasses	814
K. Singh, J. Ratnam and V.K. Deshpande, The influence of V_2O_5 on the electrical conductivity of $\text{Li}_2\text{O}:\text{B}_2\text{O}_3$ system	821
ENERGY STORAGE AND CONVERSION	
R.G. Linford, Applications of solid state ionics for batteries	831
J.R. Akridge and H. Vourlis, Performance of Li/TiS_2 solid state batteries using phosphorous chalcogenide network former glasses as solid electrolyte	841
J. Guitton, B. Dongui, R. Mosdale and M. Forestier, New negative metallic electrode for solid batteries with a solid protonic conductor (SPC) as electrolyte	847
F. Bonino, A. Selvaggi and B. Scrosati, $\text{Li}/\text{LiV}_3\text{O}_8$ polymer electrolyte rechargeable batteries	853
J.Y. Cherng, M.Z.A. Munshi, B.B. Owens and W.H. Smyrl, Applications of multivalent ionic conductors to polymeric electrolyte batteries	857
N. Kumagai, N. Ikenoya, I. Ishiyama and K. Tanno, Electrochemical and structural characteristics of niobium vanadium oxide electrodes in a secondary lithium battery	862
R. Koksang, S. Yde-Andersen, K. West, B. Zachau-Christiansen and S. Skaarup, Lithium and sodium insertion in ternary chromium oxides	868
M. Maly-Schreiber, R.A. Huggins and K. Maly, Thermodynamic properties of titanium-nickel hydrides	873
G. Pistoia, M. Pasquali, L.A. de Picciotto and M.M. Thackeray, Behaviour of the spinel LiV_2O_4 as a positive electrode for secondary Li cells	879
J.P. Pereira-Ramos, R. Messina, L. Znaidi and N. Baffier, Electrochemical lithium intercalation in $\text{Na}_{0.33}\text{V}_2\text{O}_5$ bronze prepared by sol-gel processes	886
F. Croce, S. Panero, P. Prosperi and B. Scrosati, Electrochemical characterization of a polymer/polymer, rechargeable solid-state lithium cell	895
A. Turković, Stability of the $\alpha\text{-RbCu}_4\text{Cl}_{3+x}\text{I}_{2-x}$ solid-electrolyte cell	900

PART II**POLYMERS**

M. Watanabe, S. Nagano, K. Sanui and N. Ogata, Estimation of Li^+ transport number in polymer electrolytes by the combination of complex impedance and potentiostatic polarization measurements	911
P.G. Bruce, J. Evans and C.A. Vincent, Conductivity and transference number measurements on polymer electrolytes	918
D. Fauteux, J. Prud'homme and P.E. Harvey, Electrochemical stability and ionic conductivity of some polymer-LiX based electrolytes	923
K.C. Andrews, M. Cole, R.J. Latham, R.G. Linford, H.M. Williams and B.R. Dobson, EXAFS studies on divalent polymeric electrolytes: an investigation of $\text{PEO}_4:\text{CaI}_2$ at room temperature	929
F.M. Gray, C.A. Vincent and M. Kent, Dielectric studies of poly(ethylene oxide)-based polymer electrolytes using time-domain spectroscopy	936
L. Dominquez and W.H. Meyer, Solid polyelectrolytes	941
A. Bouridah, F. Dalard and M. Armand, Utilisation of poly(decaviologen) as anion specific electrode for organic polymer electrolyte	950
R. Frech, J. Manning, D. Teeters and B.E. Black, Vibrational spectroscopic study of a low frequency polymer backbone mode in poly(propylene oxide)-sodium thiocyanate complexes	954
J. Sandahl, S. Schantz, L.M. Torell and R. Frech, Sound velocity, local intrachain flexibility and structural relaxation in MSCN-poly(propylene glycol) complexes; a Brillouin scattering study	958
C. Bridges and A.V. Chadwick, Activation volumes for ion diffusion in polyether electrolytes	965
P. Donoso, W. Górecki, C. Berthier, F. Defendini, C. Poinsignon and M.B. Armand, NMR, conductivity and neutron scattering investigation of ionic dynamics in the anhydrous polymer protonic conductor $\text{PEO}(\text{H}_3\text{PO}_4)_x$	969
S. Skaarup, K. West and B. Zachau-Christiansen, Mixed phase solid electrolytes	975
J. Plocharski and W. Wiczorek, PEO based composite solid electrolyte containing NASICON	979
D. Naegele and R. Bittihn, Electrically conductive polymers as rechargeable battery electrodes	983
R. Huq and G.C. Farrington, Ion transport in divalent cation complexes of poly(ethylene oxide)	990
E. Linden and J.R. Owen, Conductivity measurements on amorphous PEO copolymers	994
P. Passiniemi, S. Takkumäki, J. Kankare and M. Syrjämä, Ionic conduction in ethylene oxide-propylene oxide copolymers containing LiClO_4	1001

J.C. Argoud, W. Górecki and M. Fouletier, Synthesis and conductivity of (PEO, M_2ZrX_6) electrolytes	1004
G. Chiodelli, P. Ferloni, A. Magistris and M. Sanesi, Ionic conduction and thermal properties of poly(ethylene oxide)-lithium tetrafluoroborate films	1009
W. Wieczorek, J. Płocharski, J. Przyłuski, S. Głowinkowski and Z. Pająk, Impedance spectroscopy and phase structure of $PeO-NaI$ complexes	1014
W. Górecki, P. Donoso, C. Berthier, M. Mali, J. Roos, D. Brinkmann and M.B. Armand, NMR, DSC and conductivity study of the polymer solid electrolytes $P(EO)(C_{p+1}F_{2p+3}SO_3)_x$	1018
D.R. Figueroa, J.J. Fontanella, M.C. Wintersgill, J.P. Calame and C.G. Andeen, TSDC and DR studies on PEO complexed with inorganic salts	1023
L. Yang, A. Zhang, B. Qiu, J. Yin and Q. Liu, Effects of thermal history on lithium salt-poly(ethylene) complex polymer electrolytes	1029
J.F. le Nest, H. Cheradame and A. Gandini, A mechanism of ionic conduction in cross-linked polyethers	1032
R.M. Faria, N. Alves and G.F. Leal Ferreira, Transient ionic electrical current in samples of PVDF due to dissociated bulk water	1038
S.G. Greenbaum, K.J. Adamić, Y.S. Pak, M.C. Wintersgill and J.J. Fontanella, NMR, DSC and electrical conductivity studies of MEEP complexed with $NaCF_3SO_3$	1042
S. Schantz, J. Sandahl, L. Börjesson, L.M. Torell and J.R. Stevens, Ion pairing in polymer electrolytes; a comparative Raman study of $NaCF_3SO_3$ complexed in poly(propylene-glycol) and dissolved in acetonitrile	1047
D. Teeters, S.L. Stewart and L. Svoboda, Study of the phase separation and glass transition temperatures of poly(propylene oxide)-thiocyanate salt complexes	1054
B. Marsan, D. Fauteux and A.K. Vijh, Characterization of high and low molecular weight PEO- Na_2S_4 -based electrolytes used in a photoelectrochemical cell	1058
COMPOSITE ELECTROLYTES	
N.J. Dudney, Enhanced ionic conductivity in composite electrolytes	1065
J. Maier, On the electronic conductivity of composite electrolytes	1073
G. Deublein, B.Y. Liaw and R.A. Huggins, Controlled electrolyte environments and their use for studying and modifying materials properties: potentials for employment in practical devices	1078
G. Deublein, B.Y. Liaw and R.A. Huggins, Hydrogen-conducting electrolyte configurations	1084
M. Mali, J. Roos, D. Brinkmann, J.B. Phipps and P.M. Skarstad, 7Li and ^{127}I NMR in LiI single crystals	1089
M.A.K.L. Dissanayake and M.A. Careem, Electrical conductivity of the Li_2SO_4 - $CaSO_4$ and Li_2SO_4 - $MgSO_4$ systems	1093
E. Hartmann, V.V. Peller and G.I. Rogalski, Electrical conductivity of fluoride eutectic composites	1098

MIXED CONDUCTORS, SEMICONDUCTOR IONICS

D. Soltz, G. Dagan and D. Cahen, Ionic mobility and electronic junction movement in CuInSe_2	1105
M. Kleinfeld and H.-D. Weimhöfer, Chemical diffusion coefficients and stability of CuInS_2 and CuInSe_2 from polarization measurements with point electrodes	1111
G.A. Wiegers, A.G. Gerards, H. Roede, R.J. Haange and B.A. Boukamp, The stability of intercalation compounds Ag_xTaS_2	1116
P.G. Dickens, A.V. Powell and A.M. Chippindale, Alkali metal insertion compounds of uranium oxides	1123
K. West, B. Zachau-Christiansen, T. Jacobsen and S. Skaarup, Sodium insertion in vanadium oxides	1128
C. Delmas, J.J. Braconnier, Y. Borthomieu and M. Figlarz, From sodium nickelate to nickel hydroxide	1132
M.D. Rogers and C.A. Vincent, The effect of ionic conductivity on the apparent chemical diffusion coefficient of a composite electrode	1138
G.S. Rohrer and G.C. Farrington, Electronic conductivity in $\text{Pb(II)-}\beta''\text{-alumina}$	1142
K. Kitajima and J.B. Wagner Jr., Electrical conductivity of $\alpha\text{-HgI}_2$	1146
Y. Chabre, P. Deniard and R. Yazami, Electrochemical lithium intercalation in zirconium diselenide: study of the effect of the host compound stoichiometry	1153
T. Ohachi, S. Imai, T. Tanaka, H. Yamai and T. Taniguchi, Semiconducting and atomic properties of the mixed conductor $\alpha\text{-Ag}_2\text{S}$	1160
C. Julien, M. Jouanne, P.A. Burret and M. Balkanski, Optical studies of the cathode material InSe intercalated with lithium	1167
P. Ge and M. Foulletier, Electrochemical intercalation of sodium in graphite	1172
B. Zachau-Christiansen, K. West, J. Jacobsen and S. Atlung, Lithium insertion in different TiO_2 modifications	1176
M. Nabavi, C. Sanchez, F. Taulelle, J. Livage and A. de Guibert, Electrochemical properties of amorphous V_2O_5	1183
B.A. Boukamp, I.C. Vinke, K. Seshan, K.J. de Vries and A.J. Burggraaf, Influence of electrode geometry and NLLS fit analysis of I - V measurements in a three-electrode cell	1187
M.G. Minett and J.R. Owen, Polymeric insertion electrodes	1192
G. Betz and H. Tributsch, Light-induced proton transfer reactions at polymer/electrolyte interfaces	1197
I.C. Vinke, K. Seshan, B.A. Boukamp, K.J. de Vries and A.J. Burggraaf, The electrochemical influence and oxygen exchange properties of mixed conducting electrode materials on solid oxide electrolytes	1201

A. Hammouche and E.J.L. Schouler, Electrical and thermal properties of Sr-doped lanthanum manganites	1205
M.T. Hutchings, T.W.D. Farley, M.A. Hackett, W. Hayes, S. Hull and U. Steigenberger, Neutron scattering investigation of lattice dynamics and thermally induced disorder in the antiferroite Mg_2Si	1208
HIGH TEMPERATURE CHEMISTRY	
W.L. Worrel, High-temperature applications of solid-state ionics	1215
R.J. Tarento and C. Monty, Influence of non-stoichiometry on the oxygen self-diffusion in Co_{1-x}O single crystals	1221
M. Martin and S. Dorris, Impurity diffusion of iron in cobalt oxide	1230
J. Nowotny, Surface segregation of defects in oxide ceramic materials	1235
G. Petot-Ervas, C. Petot, B. Lesage, A.M. Huntz and C. Severac, Localization of carbon and its influence on the transport properties of oxides	1244
Y. Yokogawa, M. Yoshimura and S. Sōmiya, Order-disorder in R_3TaO_7 (R=rare earth) phases	1250
G. Róg and G. Borchardt, Solid electrolytes for the study of thermodynamic properties of silicates	1254
SOLID STATE CHEMISTRY	
F. d'Yvoire, E. Bretey and G. Collin, Crystal structure, non-stoichiometry and conductivity of $\text{II-Na}_3\text{M}_2(\text{AsO}_4)_3$ (M=Al, Ga, Cr, Fe)	1259
S. Li, J. Cai and Z. Lin, Phase relationships and electrical conductivity of $\text{Li}_{1+x}\text{Ge}_{2-x}\text{Al}_x\text{P}_3\text{O}_{12}$ and $\text{Li}_{1+x}\text{Ge}_{2-x}\text{Cr}_x\text{P}_3\text{O}_{12}$ systems	1265
R. Kniep, W. Wezel, W. Weppner and A. Rabenau, Quasibinary systems of lithium halides with aliphatic alcohols and ethylenediamine	1271
R. Kanno, Y. Takeda and O. Yamamoto, Structure, ionic conductivity and phase transformation of double chloride spinels	1276
H.D. Lutz, P. Kuske and K. Wussow, Ionic motion of tetrahedrally and octahedrally coordinated lithium ions in ternary and quaternary halides	1282
K.-D. Junke, M. Mali, J. Roos, D. Brinkmann, A. Lundén and B. Granéli, Ion dynamics in $(1-x)\text{Li}_2\text{SO}_4 \cdot x\text{Na}_2\text{SO}_4$ systems studied by ^7Li and ^{23}Na NMR	1287
K.D. Becker and F. Rau, High-temperature ligand field spectra and cation disorder and dynamics in spinels: CoAl_2O_4	1290
P.G. Dickens, A.T. Short and S. Crouch-Baker, The crystal structure of $\text{D}_{1.7}\text{MoO}_3$ by powder neutron diffraction	1294
J.P. Laval, A. Mikou, B. Frit and G. Roult, Short-range order in heavily doped $\text{CaF}_2\text{:Ln}^{3+}$ fluorites: a powder neutron diffraction study	1300

M. Lumbreras, J. Schram, J. Schoonman and E.J.L. Schouler, Electrical conductivity of mixed lead halides $\text{PbCl}_{2x}\text{Br}_{2(1-x)}$	1305
Ø. Johannesen, The effect of homovalent substitution on the ionic conductivity of $\text{KCl}_x\text{Br}_{1-x}$ mixed crystals	1310
A. Zerouale, B. Cros, B. Deroide and M. Ribes, Electrical properties of $\text{Ag}_7\text{GeSe}_5\text{I}$	1317
E. Wolska and W. Szajda, The effect of cationic and anionic substitution on the $\alpha\text{-(Al, Fe)}_2\text{O}_3$ lattice parameters	1320
W. Sitte and A. Brunner, Investigation of the binary system Ag-Te in the temperature range between 25 and 200°C using solid silver electrolytes	1324
K.-D. Junke, M. Mali, J. Roos and D. Brinkmann, NMR evidence for modification of the crystal structure of $\beta\text{-LiNaSO}_4$	1329
M. Oliveria, R.K. McMullan and B.J. Wuensch, Single crystal neutron diffraction analysis of the cation distribution in the high-temperature phases $\alpha\text{-Cu}_{2-x}\text{S}$, $\alpha\text{-Cu}_{2-x}\text{Se}$, and $\alpha\text{-Ag}_2\text{Se}$	1332
T.P. Feist, S.J. Mocarski, P.K. Davies, A.J. Jacobson and J.T. Lewandowski, Formation of $\text{TiO}_2(\text{B})$ by proton exchange and thermolysis of several alkali metal titanate structures	1338
F. Millot and C. Picard, Oxygen self-diffusion in non-stoichiometric rutile TiO_{2-x} at high temperature	1344
E. Wolska, Relations between the existence of hydroxyl ions in the anionic sublattice of hematite and its infrared and X-ray characteristics	1349
J.R. Gavarri, P. Garnier, P. Boher and A.J. Dianoux, Quasielastic neutron scattering study of proton motions in chemical and electrochemical PbO_2 oxides	1352
F. Archaimbault, P. Odier and J. Choisnet, Non-stoichiometric compounds with a defect CaFe_2O_4 structure: the mixed ferrites $\text{Ca}_{1-x/2}\text{Fe}_{2-x}\text{Sn}_x\text{O}_4$ and $\text{Ca}_{1-(x+y)/2}\text{Li}_y\text{Fe}_{2-x}\text{Sn}_x\text{O}_4$	1357
L.A. de Picciotto, M.M. Thackeray and G. Pistoia, An electrochemical study of the systems $\text{Li}_{1\pm x}\text{V}_2\text{O}_4$ and $\text{Li}_{1-x}\text{VO}_2$ ($0 \leq x \leq 1$)	1364
K. Singh, A first attempt to study the electrical properties of aliovalent cation substituted Ag_2SO_4	1371
SURFACES, INTERFACES	
A. Atkinson, Surface and interface mass transport in ionic materials	1377
J.B. Bates and Y.T. Chu, Surface topography and electrical response of metal-electrolyte interface	1388
W. Carrillo-Cabrera and J.B. Wagner Jr., The effect of high temperature pre-annealing on the electrical conductivity of polycrystalline nickel oxide at intermediate temperatures	1396
M.W. Breiter, H. Drstak and M. Maly-Schreiber, Impedance studies of the cell $\text{Ag}/\text{AgI}/\text{Ag}\beta\text{-alumina}/\text{AgI}/\text{Ag}$	1402

M. Hiratani, K. Miyauchi and T. Kudo, Effect of a lithium alloy layer inserted between a lithium anode and a solid electrolyte	1406
G. Wedler, Characterization of surfaces and adsorbed species	1411
Q.G. Liu and W.L. Worrell, Kinetics and polarization phenomena of sulfate electrolyte cell	1419
W. Göpel, U. Kirner, H.D. Wiemhöfer and G. Rocker, Surface and bulk properties of TiO ₂ in relation to sensor applications	1423
M. Hiratani, K. Miyauchi and T. Kudo, Electrode reaction at the interface between a lithium anode and a solid electrolyte	1431
J.C. Wang, Comparison of fractal and pore models for electrolyte/electrode interfaces	1436
B. Sapoval, J.-N. Chazalviel and J. Peyrierre, Effective impedance of a non-blocking fractal electrode	1441
J. Nowotny, M. Sloma and W. Weppner, Surface relaxation of Y ₂ O ₃ -stabilized ZrO ₃	1445
S.P.S. Badwal and J. Drennan, The effect of thermal history of the grain boundary resistivity of Y-TZP materials	1451
M. Nagai and T. Nishino, Surface conduction of porous hydroxyapatite ceramics at elevated temperatures	1456
K. Jaszczyński, Adsorption processes on Na-β"-alumina/Pt interface	1462
J. Maier, S. Prill and B. Reichert, Space charge effects in polycrystalline, micropolycrystalline and thin film samples: application to AgCl and AgBr	1465
X. Pan, H. Zhao and Y. Bao, Copper deposition in amorphous fast ionic conductor CuCl-Cu ₂ O-MoO ₃ -P ₂ O ₅ using Auger electron spectroscopy	1470
G.Y. Li, A surface analysis of ion transport in the surface layer of fast ion conductors	1473
MICROIONICS, THIN FILMS	
R.D. Rauh, Microionic insertion sensors	1479
J.R. Upton, J.R. Owen, P.J. Tufton, J.D. Benjamin, B.C.H. Steele and R.A. Rudkin, Fabrication and discharge characteristics of thin film polymer electrolyte cells	1486
L. Jourdain, J.L. Souquet, V. Delord and M. Ribes, Lithium solid state glass based microgenerators	1490
S. Mühlherr, K. Läger, E. Schreck, K. Dransfeld and N. Nicoloso, The ionic conductivity profile of thin evaporated AgCl films on a planar sapphire substrate	1495
I. Samaras, J.P. Guesdon, M. Tsakiri, C. Julien and M. Balkanski, Behaviour of indium selenide thin films intercalated lithium	1506
N. Wakabayashi and O. Yamamoto, Electrical conductivity and thermal diffusivity of thin Y ₂ O ₃ -stabilized zirconia film	1510
B. Wassermann, T.P. Martin and J. Maier, Electrical properties of the hexagonal modification of lithium iodide	1514

HETEROGENEOUS CATALYSIS

- C.G. Vayenas, Catalytic and electrocatalytic reactions in solid oxide fuel cells 1521
- W.F. Chu and F.J. Rohr, Catalytic reduction of nitric oxide in flue gas 1540
- B.C.H. Steele, I. Kelly, H. Middleton and R. Rudkin, Oxidation of methane in solid state electrochemical reactors 1547
- A. Ovenston, J.R. Walls, S. Miri and T. Ramdeen, The high-temperature dc and ac characteristics of catalysts comprising a potassium tungsten bronze or a potassium magnesium titanate and insulating ceramic oxides 1553
- O. Nakamura and I. Ogino, Oxide catalysts for hydrogen electrode in molybdophosphoric acid solid electrolyte fuel cells 1558

EXPERIMENTAL TECHNIQUES

- M.A. Saltzberg, J.O. Thomas and R. Wäppling, Mössbauer spectroscopy studies of the reduction of Eu(III) in β'' -alumina 1563
- P. Baudry, M. Armand, M. Gauthier and J. Masounave, In situ observation by SEM of positive composite electrodes during discharge of polymer lithium batteries 1567
- V. Clément, D. Ravaine, C. Déportes and R. Billat, Measurement of Hall mobilities in $\text{AgPO}_3\text{-AgI}$ glasses 1572
- M.P. Setter and J.B. Wagner Jr., A comprehensive method to characterize mixed conduction electrolytes 1579
- T. Norby, EMF method determination of conductivity contributions from protons and other foreign ions in oxides 1586
- T.L. Wen, Z.Y. Lü and X.F. Li, Estimation of n -type conductivity of ZrO_2 1592
- Y.-Q. Fan, Cation diffusion and conduction in solid electrolytes Li,Na-montmorillonites 1596
- G. Spinolo, G. Chiodelli, U. Anselmi Tamburini and A. Magistris, Error analysis and choice of conflicting models in impedance spectroscopy 1602
- G. Chiodelli and M. Villa, A performing impedance spectroscopy system 1607
- G. Lucazeau, D. Dohy, N. Fanjat and A.J. Dianoux, Study of the dynamics of a single crystal of $\text{Na}^+\beta\text{-Al}_2\text{O}_3$ by neutron scattering 1611
- J.C. Badot, N. Baffier, A. Fourier-Lamer and Ph. Colomban, Dielectric relaxation: a new technique to study protonic transfer in superionic conductors 1617

SENSORS

- M. Josowicz and J. Janata, Organic polymer films for solid-state sensor applications 1625
- K.D. Schierbaum, H.D. Wiemhöfer and W. Göpel, Defect structure and sensing mechanism of SnO_2 gas sensors: comparative electrical and spectroscopic studies 1631

N. Nicoloso, W. Kernler, B. Leibold, A. Löbert and W. Weppner, Electrical response of oxygen sensing TiO_2 surfaces and fractal Pt/YSZ interfaces	1637
Y. Saito and T. Maruyama, Recent developments of the sensors for carbon oxides using solid electrolytes	1644
J. Salardenne, F. Labidi and D. Birot, A thin film electrochemical oxygen sensor working near room temperature	1648
M. Madou and T. Otagawa, Electrolytic media for chemical sensors	1653
G. Deublein, B.Y. Liaw and R.A. Huggins, Novel electrochemical hydrogen sensors for use at elevated temperatures	1660
W. Koch and H. Rickert, Inertia-EMF of periodically accelerated RbAg_4I_5 samples for frequencies up to 5 kHz	1664
Q.-G. Liu and W.L. Worrell, Development of solid-state electrochemical sensors for high-temperature applications	1668
S.P.S. Badwal, F.T. Ciacchi and W.G. Garrett, Differential response rate technique: a comparison of electrode response of Nernstian sensor cells	1673
W.C. Maskell and B.C.H. Steele, Miniature amperometric oxygen pump-gauge	1677
M. Dekker, R.A. Kalwij, J. Schram and J. Schoonman, Impedance spectroscopy of sulphate solid electrolytes	1682
R.V. Kumar and D.J. Fray, Solid-state hydrogen sensors based on SrCl_2 electrolyte	1688
E. Siebert, J. Fouletier and M. Bonnat, Mechanism of the oxygen sensing electrode on solid halide electrolytes	1693
N. Valverde-Diez and D. Grande-Fernández, Ternary compounds of the system Mg-Mn-O oxygen sensors	1697
P. Ge, E. Siebert and M. Fouletier, Chemically modified PTFE-carbon as a solid state oxygen sensor electrode material	1701
ELECTRONICS	
R.D. Rauh and S.F. Cogan, Counter electrodes in transmissive electrochromic light modulators	1707
R.B. Goldner, T.E. Haas, G. Seward, K.K. Wong, P. Norton, G. Foley, G. Berera, G. Wei, S. Schulz and R. Chapman, Thin film solid state ionic materials for electrochromic smart window TM glass	1715
P. Judeinstein, J. Livage, A. Zarudiansky and R. Rose, An "all gel" electrochromic device	1722
G. Xu and L. Chen, Lithium diffusion in WO_3 films	1726
D. Pedone, M. Armand and D. Deroo, Voltammetric and potentiostatic studies of the interface WO_3 /polyethylene oxide- H_3PO_4	1729

- S.J. Golden and B.C.H. Steele, Thin-film tin-doped indium oxide counter-electrode for electrochromic applications 1733

- A. Corradini, A.M. Marinangeli, M. Mastragostino and B. Scrosati, Polydithienothiophene: a conducting polymer as electrochromic material 1738

NEW MATERIALS

- L. Chen, Oxide superconductor $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ and its derivatives 1745

- L. Znaidi, N. Baffier and D. Lemordant, Kinetics of the H^+/M^+ ion exchange in V_2O_5 xerogel 1750

- R. Yazami and A. Hamwi, A new graphite fluoride compound as electrode material for lithium intercalation in solid state cells 1756

- A. Coucou and M. Figlarz, A new tungsten oxide with 3D tunnels: WO_3 with the pyrochlore-type structure 1762

- M. Scagliotti, F. Parmigiani, G. Chiodelli, A. Magistris, G. Samoggia and G. Lanzi, Plasma-sprayed zirconia electrolytes 1766

BIOLOGICAL MEMBRANES

- G. Stark, Ion transport through lipid membranes 1773

- J.B. Phipps, R.V. Padmanabhan and G.A. Lattin, Transport of ionic species through skin 1778